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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/777,863 | 02/07/2001 | Alexander Mark Franz | 0026-0008 | 4022 |

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EXAMINER

LERNER, MARTIN

ART UNIT PAPER NUMBER

2654

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/777,863

Applicant(s)

FRANZ ET AL.

Examiner

Martin Lerner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 to 24 is/are allowed.
- 6) ☒ Claim(s) 1 to 4 and 8 to 19 is/are rejected.
- 7) ☒ Claim(s) 5 to 7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 8, 10 to 12, and 17 to 19 are rejected under 35 U.S.C. 102(e) as being anticipated by *Weber* ('524).

Regarding independent claims 1, 17, and 18, *Weber* ('524) discloses a method, system, and computer-readable instructions, comprising:

“means for receiving the voice search query from the user” – microphone 110 captures one or more spoken words (column 7, lines 8 to 9: Figures 1 and 3A: Step 300); the system comprises a speech processor for searching grammar files and a natural language processor for searching a database for a matching entry (column 2, lines 58 to 67); generally, the method and system provides for searching databases for information about news, stocks, weather, movies, and web pages (column 11, line 50 to column 13, line 59);

“means for deriving one or more recognition hypotheses from the voice search query” – grammars are searched for a matching word or phrase of the utterance

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(column 7, lines 31 to column 8, line 10: Figure 3A: Steps 304, 310, and 316); the natural language processor database 218 is searched for possible matches to the phrase, based on whether the NLP database 218 contains any of the words in the phrase (or their synonyms), and the relative weights of those words (column 10, lines 45 to 49: Figures 2 and 3B: Step 336);

“means for associating a weight with each of the recognition hypotheses” – individual words in the phrase are weighted according to their relative importance or significance to the overall meaning of the phrase by word weighter 208 (column 10, lines 17 to 30: Figures 2 and 3B: Step 334); a confidence weight is generated for each of the possible matching entries based on the number of occurrences of each of the words in the phrase and their relative weights (column 10, lines 49 to 61: Figure 3B: Step 338);

“means for construction a weighted boolean query using the recognition hypotheses” – boolean tester 210 performs a boolean “AND” test to determine whether each one of the non-noise words in the phrase (or its synonym) is actually present in the highest-confidence entry (column 11, lines 39 to 49: Figure 3B: Step 348); a confidence weight is generated for each of the possible matching entries based on the number of occurrences of each of the words in the phrase and their relative weights; weighted word searching of a database is well known in the art (column 10, lines 49 to 61: Figure 3B: Step 338);

“means for providing the weighted Boolean query to a search system” – searching of the databases for information about news, stocks, weather, movies, and

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web pages is performed by boolean "AND" search logic for each of the words in the phrase (or its synonym);

"means for obtaining results from the search system" – for the highest-confidence entry, an associated action is performed; for example, if the highest-confidence entry is "show me the news", the associated action may be to access a predetermined news web site on the Internet (column 11, lines 50 to 67: Figure 3C: Step 350).

Regarding independent claim 19, *Weber* ('524) further discloses a central processing unit 102 for performing the method for searching databases (column 5, lines 20 to 33: Figure 1), and storage medium 108 for storing speech recognition processor 220, natural language processor 202, grammar files 212, 214, 216, 217, and natural language processor database 218 ("a language model"); "a server" is only preambularly recited in the claim, and is not entitled to patentable weight.

Regarding claim 2, *Weber* ('524) discloses speech recognition processor 220, natural language processor 202, grammar files 212, 214, 216, 217, and natural language processor database 218 ("a language model") are searched for matching words or phrases to interpret the utterance (column 7, line 14 to column 8, line 10).

Regarding claim 8, *Weber* ('524) discloses a procedure for discarding "noise" words for retrieving the highest-confidence entry that does not contribute significantly to the overall meaning of the phrase (column 11, lines 11 to 30: Figures 3B and 3C: Steps 344, 346, and 348) after an initial search determines a highest-confidence entry (column

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10, line 62 to column 11, line 11: Figure 3B: Steps 338 and 340); thus, providing a highest-confidence entry after discarding "noise" words is equivalent to "adjusting a ranking of the results of the search system based on the weights."

Regarding claim 10, *Weber* ('524) discloses the natural language processor 202 determines whether any of the possible matching entries has a confidence value greater than or equal to some predetermined minimum threshold, T; if there is no possible matching entry with a confidence value greater than or equal to T, then an optional error message is displayed (column 10, line 62 to column 11, line 10: Figure 3B: Steps 340 and 342); thresholding is performed prior to a final search with discarded "noise" words from a phrase ("prior to constructing the weighted boolean query") (Figures 3B and 3C: Steps 344, 346, 348); implicitly, if there are no matching entries with a confidence value greater than or equal to T, the search is discarded.

Regarding claim 11, *Weber* ('524) discloses boolean tester 210 performs a boolean "AND" test to determine whether each one of the non-noise words in the phrase (or its synonym) is actually present in the highest-confidence entry (column 11, lines 39 to 49: Figure 3B: Step 348); because synonyms are alternatives to each of the words in the phrase being searched, using synonyms in a search query is equivalent to an "OR-query".

Regarding claim 12, *Weber* ('524) discloses a procedure for discarding "noise" words for retrieving the highest-confidence entry that does not contribute significantly to the overall meaning of the phrase (column 11, lines 11 to 30: Figures 3B and 3C: Steps 344, 346, and 348) after an initial search determines a highest-confidence entry (column

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10, line 62 to column 11, line 11: Figure 3B: Steps 338 and 340); thus, providing a highest-confidence entry after discarding "noise" words is equivalent to "refining the weighted boolean search based on the results of the search system."

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 4, 9, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Weber* ('524) in view of *Mahajan et al.*

Concerning claim 3, *Weber* ('524) does not expressly disclose updating a language model, phonetic dictionary, or acoustic model using the voice search query, although it is common in the art to adapt or update models in speech recognition. However, *Mahajan et al.* teaches information retrieval and speech recognition based on language models, wherein the language model 70 is adapted on-the-fly after the query has been executed against a relevancy measure for each of the documents. (Column 9, Line 40 to Column 10, Line 11: Figure 3: Steps 94, 96, and 98) *Mahajan et al.* suggests that adapting a language model has the advantage of improving the accuracy and speed of the recognition process. (Column 3, Lines 16 to 28) It would have been obvious to one having ordinary skill in the art to update a language model as suggested by *Mahajan et al.* in the speech recognition and natural language interactive user

interface of *Weber* ('524) for the purpose of improving the accuracy and speed of the recognition process.

Concerning claim 4, *Weber* ('524) discloses identifying context-specific grammars 212 ("a language model"), and using the identified language model to derive recognition hypotheses. (Column 7, Lines 14 to 45; Column 8, Lines 11 to 38; Figure 3A: Steps 302, 304, and 306) The only element not expressly disclosed by *Weber* ('524) is a language model based on "at least one characteristic associated with the user". However, a context-specific grammar may be based on a subject commonly accessed by the user. *Mahajan et al.* teaches information retrieval and speech recognition based on language models, wherein topic dependent language models can be retrieved based on input by the user as to the subject. (Column 7, Lines 32 to 38) Moreover, if a user may tend to dictate more formal documents, the system can be configured to generate documents with a language model adapted to formal documents. (Column 10, Lines 12 to 66) It would have been obvious to one having ordinary skill in the art to identify a language model to derive recognition hypotheses based on a characteristic associated with the user as suggested by *Mahajan et al.* in the speech recognition and natural language interactive user interface of *Weber* ('524) for the purpose of improving the accuracy and speed of the recognition process.

Concerning claim 9, *Weber* ('524) discloses providing a highest-confidence entry based on a weighted search query, but does not expressly disclose organizing the results based on the weights. However, those skilled in the art know it is common to organize search results by relevancy to assist the user in more readily identifying a

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desired document. *Mahajan et al.* teaches information retrieval and speech recognition based on language models, wherein the system determines a relevancy measure of each document, and ranks the documents according to relevancy. (Column 14, Lines 27 to 44: Figure 4: Step 118) It would have been obvious to one having ordinary skill in the art to organize documents retrieved from a search by relevancy as suggested by *Mahajan et al.* in the speech recognition and natural language interactive user interface of *Weber ('524)* for the purpose of assisting the user to more readily identify a desired document.

Concerning claims 13 and 14, *Mahajan et al.* teaches adapting a language model based on the information retrieved as a result of the executed query. (Column 8, Lines 16 to 53) *Weber ('524)* discloses that phrases having no matching entry with a confidence value greater than a threshold have zero hits, and produce an error message. (Column 11, Lines 1 to 10) Thus, these search results are discarded.

5. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Weber ('524)* in view of *Padmanabhan et al.*

Weber ('524) discloses refining a search query based on eliminating "noise" words, but does not expressly disclose detecting compound words in recognition hypotheses, constructing the weighted boolean queries with detected compounds, and refining the weighted Boolean query based on detected compounds to provide new search results. However, *Padmanabhan et al.* teaches a method and apparatus for forming compound words in speech recognition, wherein a compound word formation

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module changes acoustic and/or language model vocabularies to improve speech recognition performance. (Column 5, Lines 56 to 61) After the training corpus, language model, and acoustic vocabulary have been augmented with compound words, the hypothesis search module may perform improved recognition with the augmented language model and augmented acoustic vocabulary. (Column 10, Lines 5 to 15) It would have been obvious to one having ordinary skill in the art to augment a language model and acoustic vocabulary with compound words as taught by *Padmanabhan et al.* in the weighted speech recognition and natural language interactive user interface of *Weber ('524)* for the purpose of improving recognition performance.

Allowable Subject Matter

6. Claims 20 to 24 are allowed.
7. Claims 5 to 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Weber ('444), True et al., Byrd, Jr. et al., Wyard et al., Arnold et al., Nelson et al., Even, Van Aelten et al., and Kao disclose related art.

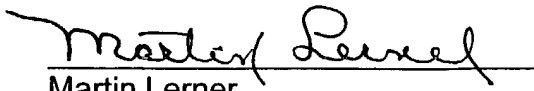
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
7/12/04


Martin Lerner
Examiner
Group Art Unit 2654